

Title (en)  
Light emitting diode

Title (de)  
Leuchtdiode

Title (fr)  
Diode électroluminescente

Publication  
**EP 2355183 B1 20190306 (EN)**

Application  
**EP 11151631 A 20110121**

Priority  
KR 20100009210 A 20100201

Abstract (en)  
[origin: EP2355183A2] Provided are a light emitting diode, (100,102,103) a light emitting diode package (200), and a lighting system (1100,1200). The light emitting diode includes a light emitting structure (120) including a first conductive type semiconductor layer (122), a second conductive type semiconductor layer (126), and an active layer (124) between the first conductive type semiconductor layer and the second conductive type semiconductor layer and a light extraction pattern (P) in which a period (a) exceeds  $\lambda/n$  (where,  $\lambda$ , is a wavelength of light emitted from the active layer, and n is a refractive index of the light emitting structure) on the light emitting structure. The period (a) may be in the range of  $5 \times (\lambda/n) < a < 15 \times (\lambda/n)$ . An etching depth (h) of the light extraction pattern (P) may be equal to or greater than  $\lambda/n$ .

IPC 8 full level  
**H01L 33/38** (2010.01); **H01L 33/22** (2010.01); **H01L 33/20** (2010.01); **H01L 33/46** (2010.01); **H01L 33/50** (2010.01)

CPC (source: EP US)  
**H01L 33/20** (2013.01 - EP US); **H01L 33/42** (2013.01 - US); **H01L 33/58** (2013.01 - US); **H01L 33/387** (2013.01 - US);  
**H01L 33/46** (2013.01 - EP US); **H01L 33/50** (2013.01 - EP US); **H01L 2224/48091** (2013.01 - EP US); **H01L 2924/12032** (2013.01 - EP US);  
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Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)  
**EP 2355183 A2 20110810; EP 2355183 A3 20141210; EP 2355183 B1 20190306**; CN 102142500 A 20110803; CN 102142500 B 20141126;  
KR 100993094 B1 20101108; US 2011186814 A1 20110804; US 2013292730 A1 20131107; US 2015034991 A1 20150205;  
US 8890182 B2 20141118; US 9391248 B2 20160712

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**EP 11151631 A 20110121**; CN 201110036228 A 20110201; KR 20100009210 A 20100201; US 201113017872 A 20110131;  
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